

PATENT CLAIMS

1. A low-temperature fuel cell with an anode, cathode and an electrolyte membrane arranged therebetween, whereby the cathode has a diffusion layer and a catalyst layer arranged on the diffusion layer, characterized in that the diffusion layer of the cathode bounds directly on the electrolyte membrane.

2. The low-temperature fuel cell according to claim 1 in which the catalyst layer of the cathode bounds directly on the free cathode compartment.

3. The low-temperature fuel cell according to claim 1 or claim 2 in which the diffusion layer of the cathode is composed of an ion conducting, especially proton conducting, material.

4. A method of operating a low-temperature fuel cell with an anode, a cathode and an electrolyte membrane arranged therebetween, whereby the cathode comprises a diffusion layer and a catalyst layer on the diffusion layer, with the steps of causing protons produced at the anode side to travel through the electrolyte membrane and through the diffusion layer of the cathode to the catalyst layer, supplying oxygen via the free cathode compartment directly to the catalyst layer.

5. The method according to claim 4 in which methanol or a methanol water mixture is supplied as a fuel.

6. The method according to one of claims 4 to 5 in which the oxygen is supplied as pure oxygen or as atmospheric oxygen.

7. The method according to one of the claims 4 through 6 in which the water produced at the catalyst layer of the cathode is directly discharged through the free cathode compartment.

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